DOCUMENT RESUME

ED 247 469 CG 017 629

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TITLE Effects of Guided Mental Imagery on Bicognitive Functioning among Black Male and Female Students: Implications for Improving Their Test Scores.
PUB DATE Mar 84
NOTE 18p.; Paper presented at the Annual Convention of the American Association for Counseling and Development (Houston, TX, March 18-21, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Black Students; Cognitive Style; College Students; Counseling Techniques; Higher Education; *Imagery; *Scores; *Sex Differences; Standardized Tests; *Student Improvement
IDENTIFIERS *Group Embedded Figures Test (Witken)

ABSTRACT

Recent reports have shown that black high school and college students do not fare well on standardized tests, possibly because they have not been successful when dealing with materials requiring analytical thinking in the past. Several psychologists have found that mental imagery can be used to increase motivation to achieve idealized goals. Hypothetically, the actual standardized test scores of students would be nearly the same as the test scores the students imagined themselves receiving while participating in a mental imagery activity. To examine the effects of guided mental imagery on bicognitive functioning among black male and female students, 184 black college students participated in a study dealing with the significance of the differences between actual and imagined mean Group Embedded Figures Test (GEFT) scores. The results showed that the black male students benefited more from the guided imagery treatment than did their female counterparts. Differences in the effects of the treatment on bicognitive functioning of the black male and female students may be due to variations in the amount of socialization given to black male and female children by their mothers, who may have been monocognitive or field-dependent. Further research is recommended to determine the effects of mental imagery and the effects of teaching analytical thinking on standardized test scores and on teacher-made test scores. (JAC)

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Effects of Guided Mental Imagery on Bicognitive Functioning Among Black Male and Female Students: Implications for Improving Their Test Scores

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Running head: Mental Imagery to Improve Test Scores

CG 017629

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Alternate Abstract

This study was concerned with the effects of guided mental imagery on bicognitive functioning among Black male and female students. Five null hypotheses, dealing with the significance of the differences between actual (Actual) and imagined (Imagined) mean Group Embedded Figures Test (GEFT) scores of the two experimental groups and in the mean GEFT scores of the experimental and control groups, were tested and rejected or accepted at the .05 level of significance. Fisher's t was used to test the significance of the differences between the mean GEFT scores of the students. The results show that the Black male students benefited more from the treatment than did their female counterparts. It was speculated that the differences in the effects of the treatment on bicognitive functioning of the Black male and female students were due to variations in the amount of socialization given to Black male and female children by their mothers, who may have been monocognitive or field-dependent. Further research was recommended to determine the effects of mental imagery on SAT, ACT, and NTE scores of Black students and to ascertain the effects of teaching analytical thinking on the above standardized test scores and on teacher-made test scores.

Effects of Guided Mental Imagery on Bicognitive Functioning Among Black Male and Female Students: Implications for Improving Their Test Scores

Recent reports comparing the test scores earned by high school graduates and college seniors show that Black students do not fare as well on standardized tests, such as the SAT, ACT, and NTE, as do their white counterparts. The reports indicate that in states which require passing the NTE before one is issued a teaching certificate only a small number of Black college seniors in education take the test, and of those who do, the number that earn an acceptable score is incredibly small.

Witkin and his associates (1965, 1977) studied the phenomenon of psychological differentiation and subsequently labeled their principal construct "analytic versus global" to indicate the intellectual and perceptual domains with which they were concerned. These researchers, along with Cox and Ramirez, (1980) labeled individuals with an interest in the fine details of ideas, concepts, materials, or tasks that are nonsocial as field-independent or analytic and those having only an interest in the fine details of ideas, concepts, or tasks that are social as field-dependent or global.

Several researchers (Chickering, 1977; Cox & Ramirez, 1980 Witkin and his associates 1965, 1977 Pasteur & Toldson, 1982) have noted that individuals differ by ethnicity and sex

in their preferences for dealing with bookish or academic ideas, concepts, materials, or tasks that are social and non-social. Specifically, Cox and Ramirez, along with Pasteur and Toldson, observed that Black and other minority students, whose past experiences and successes have not been bookish or academic, do not start out being interested in the fine details of these kinds of tasks. What this suggests is that the poor performance on standardized tests by Black students is related to their lack of interest or motivation to respond to items on these tests, and that their lack of motivation is a result of not having been successful when dealing wit materials requiring analytical thinking in the past.

Several psychologists (Gowan, 1978; Forisha, 1978; Caskey, 1980 and Schuster, 1978) have found that mental imagery can be used as a tool for increasing motivation to achieve idealized goals. The psychologists described mental imagery as a process wherein an individual imagines him/herself winning, succeeding or achieving an ideal goal.

According to Maltz (1960, p. 31), "If we picture ourselves performing in a certain manner, it is nearly the same as the actual performance. Mental practice helps to make perfect. This is possible because the nervous system cannot tell the difference between an actual experience and one that is vividly

imagined."

An hypothesis that may be formulated from the above is that the actual standardized test scores of students will be nearly the same as the test scores the students picture themselves receiving while participating in a mental imagery activity. This study was concerned with the effects of guided mental imagery on the Group Embedded Figures Test (GEFT) scores of Black male and female students who were enrolled in group counseling seminars for students on academic probation.

Problem Statement

The general problem of this study was: Are there significant differences in (a) the Imagined and Actual mean GEFT scores of male students, (b) the Imagined and Actual GEFT scores of female students, (c) the Imagined and Actual GEFT scores of male and female experimental groups, (d) the mean GEFT scores of male experimental and control groups, and (e) the mean GEFT scores of female experimental and control groups?

Null Hypotheses

The null hypotheses tested in this study are the following:

1. There are no significant differences between the mean Imagined and Actual GEFT scores of male students.
2. There are no significant differences between the mean Imagined and Actual GEFT scores of female students.
3. There are no significant differences between the mean GEFT scores of male and female experimental groups.
4. There are no significant differences between the mean GEFT scores of male experimental and control groups.
5. There are no significant differences between the mean GEFT scores of female experimental and control groups.

Methodology

Population/Sample

The population used in this study included 184 Black college students who were enrolled in group counseling classes for students on academic probation. The sample included 63 students from the population who volunteered to participate in

the study.

Procedure

During Spring Semester, 1983 thrity-five (35) students from the above population (20 females and 15 males) chose to serve as the control group and 28 (17 females and 11 males) made up the experimental group.

Both groups took the First Section of the GEFT. The experimental group took the mental imagery and fantasy treatment. Both groups then took the Second and Third Sections of the GEFT for a period of 10 minutes per section to maximize cultural differences as suggested in the manual. The number of figures completed correctly represented each student's score for Sections Two and Three only. Scores on Section One were not counted in the computation. The mean scores for the experimental and control groups (male and female) were computed. Subsequently, the difference between the mean scores of the experimental and control groups (male and female) were ascertained. Finally, a t-test was executed to determine the significance of the differences in the mean scores.

Results

Fisher's t was used to test the significance of the differences in the GEFT scores of the five null hypotheses. The results are presented in Tables 1,2, and 3.

Table 1

Means Summary of the Male and Female Experimental Groups' Imagined and Actual GEFT Scores

Male		Female	
Imagined GEFT Scores	Actual GEFT Scores	Imagined GEFT Scores	Actual GEFT Scores
16	13	10	04
10	05	09	04
16	08	10	06
18	16	15	10
18	15	15	11
18	16	17	15
15	18	16	13
17	15	15	18
17	16	18	10
14	12	10	06
18	18	16	14
		17	16
		18	18
		16	17
		08	05
		18	04
		12	12
EX = 177	EX = 152	EX = 240	EX = 173
N = 11	N = 11	N = 17	N = 17
Mean = 16	Mean = 14	Mean = 14	Mean = 10
S.D. = 2.43	S.D. = 3.9	S.D. = 3.48	S.D. = 5.49

T_{05}, where df = 20, is 1.47
Not significant at the .05 level

T_{05}, where df - 32, is 3.51
Significant at the .05 level

Table 2

Differences in the Mean GEFT Scores Between the Male and Female Experimental Groups

Male GEFT Scores (X_1)	Female GEFT Scores (X_2)
13	04
05	04
08	06
16	10
15	11
16	15
18	13
15	18
16	10
12	06
18	14
	16
	18
	07
	05
	04
	12
EX = 152	EX = 173
N = 11	N = 17
Mean = 14	Mean = 10
S.D. = 3.90	S.D. = 5.49

$t_{.05}$, where df = 26, is 2.48
Significant at the .05 level.

Table 3

Differences in the Mean GEFT Scores of the

Male and Female Experimental and Control Groups

Male		Female	
Experimental GEFT Scores	Control GEFT Scores	Experimental GEFT Scores	Control GEFT Scores
13	08	04	17
05	06	04	18
08	12	06	00
16	16	10	05
15	03	11	05
16	10	15	07
18	14	13	08
15	18	18	03
16	17	10	06
12	17	06	11
18	00	14	02
	05	16	05
	06	18	02
	06	07	04
	05	05	11
		04	14
		12	11
			12
			01
			09
EX = 152	EX = 143	EX = 173	EX = 151
N = 11	N = 15	N = 17	N = 20
Mean = 14	Mean = 10	Mean = 10	Mean = 8
S.D. = 3.90	S.D. = 5.6	S.D. = 5.49	S.D. = 5.27
			T = 1.24
T_{05}, where df = 24, is 2.67 Significant at the .05 level			T_{05}, where df = 35, is 1.24 Not significant at the .05 level

A t value of 1.47, computed for 20 degrees of freedom (Table 1), was found to be insignificant at the .05 level. The null hypothesis was accepted. A t value of 3.51 (Table 1), exceeded the table value for 32 degrees of freedom. The results (Table 2) show that the t value of 2.48 at 26 degrees of freedom exceeded the table value and was significant at the .05 level. The null hypothesis associated with this test was rejected. A t value of 2.67 (Table 3), was computed while testing the significance of the difference in the mean GEFT scores of hypothesis 4, using 24 degrees of freedom. The difference was significant at the .05 level and the null hypothesis also rejected. The test of the fifth null hypothesis yielded a t value of 1.24 for 35 degrees of freedom. As the t value here did not reach the .05 level of significance, the null hypothesis was accepted.

While no null hypothesis was submitted dealing with the effects of mental imagery on teacher-made test scores, the reader may be interested in knowing that several students used in this study, who were planning to take teacher-made tests, asked to participate in a guided mental imagery activity to improve their letter grades. They subsequently reported that they received letter grades from the tests which were compatible with those they imagined themselves receiving. The

grades were one (1) letter grade higher than the highest grades they had received in the courses in question. Earlier, this researcher had received positive results when guided mental imagery was used to help individuals pass the qualifying examination for the doctorate degree, CPA and Lawyers' Bar Examinations and for helping individuals to memorize and play musical scores within minutes.

Discussion

Maltz hypothesized above that if an individual pictures himself performing in a certain manner, it is nearly the same as the actual performance. The results (Tables 1,2, & 3) suggest that this is more true for the Black male students than for the Black female students used in this study. For example, there was no significant difference in the Imagined and Actual GEFT scores of the male students. What this means is that the effects of guided mental imagery on the GEFT scores were more positive for the Black male students than for the Black female students. The results of the test for significance in the mean GEFT scores between the male experimental and control groups and between the same scores of the female experimental and control groups make the above point of view even more evident. For example, the results (Table 3) indicate

that there was a significant difference in the mean GEFT scores of the male experimental and control groups but not for the female experimental and control groups.

Dyk and Witkin (1965) found that the mothers of some children were only able to introduce their children to new situations by providing them with a vague and global (field-dependent) account of the new situations during the socialization process. They found that the mothers of other children were able to introduce their children to new situations by providing them with a detailed, analytic (field-independent) account of the new situations. Inasmuch as there is a significant difference in the mean GEFT scores of the male and female control groups (Table 3), it may be inferred that the Black mothers, who are only able to introduce their children to new situations by providing them with vague and global accounts of these new situations, gain a greater opportunity to socialize their daughters in the directions they would have them to go than they do their sons. For example, Black females can be found with their mothers more often and longer and, therefore, have greater opportunities to become programmed to think globally than do their male counterparts.

The notion that Black males do not receive the same amount of global (field-dependent) programming as do their

female counterparts raises two questions. One, do Black males start out as interested in the fine details of ideas, concepts or tasks that are nonsocial as do their mainstream male counterparts? Two, if not, what could block Black males from starting out being interested in such details? Cox and Ramirez, along with Pasteur and Toldson, suggest that Black males do not start out as interested in responding to tasks which require analytical thinking as mainstream males. What this implies is that Black males are in a pivotal position when it comes to their cognitive styles. That is, these students have not been programmed to think analytically or globally. In this sense, guided mental imagery may be used as the catalyst or spark to set in motion their interest in responding to tasks that require analytical thinking. Evidence supporting this implication can be observed by the fact that the mean GEFT scores of Black male students used in this study is 10; that of the Black male experimental group is 14; and that of the mainstream norm group listed in the GEFT manual is 12.0. A similar trend can be seen with reference to the mean GEFT scores of female students. For example, the mean GEFT scores of the female control group is 8; that of the female experimental group is 10; and that of the mainstream norm female group listed in the GEFT manual is 10.8. What this means is that while the treatment did not cause a

statistically significant difference between the means of female experimental and control groups, it did cause an increase, raising the scores to a level which is only .8 points below the norm mean or that of mainstream females.

Implications

Inasmuch as the data show that mental imagery caused noticeable changes to take place in the mean GEFT scores of the female students used in the study and significant change to take place in similar scores of the male students used in the study, the results have two major implications. One, mental imagery can be used to improve scores on standardized tests such as the SAT, ACT, and NTE. Two, mental imagery may be used to improve teacher-made test scores.

Recommendation

It is recommended that counselors use mental imagery, in combination with other strategies designed to increase analytical thinking, to help minority students perform better on standardized as well as on teacher-made tests.

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